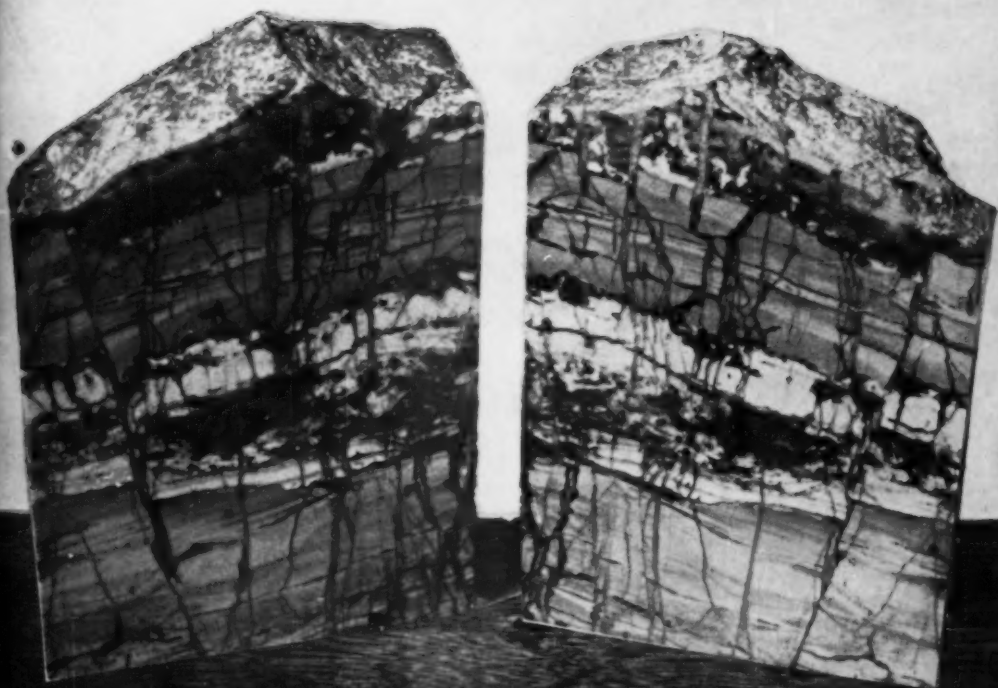




# Earth Science

JUNE 1961

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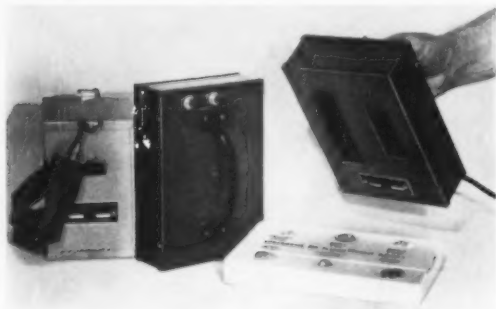
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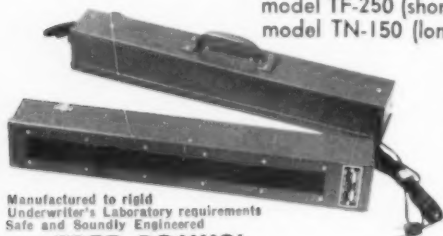


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Volume 14  
No. 3  
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**EARTH SCIENCE PRESENTS FOR JUNE, 1961**

- 101 EDITOR'S MEMO PAD  
*Early Federation History, Conventions, Rip Rap and Miscellaneous.*
- 107 KONA DOLOMITE Robert Markert  
*The "Cinderella" Mineral has only recently come into its own as having great possibilities for the lapidary arts.*
- 110 WHY ATTEND A GEM SHOW June Culp Zeitner  
*Our author gives us many good reasons.*
- 111 PETOSKEYS—  
CABS TO CARVING Betty Riberdy and Edith Smith  
*Already popular, this stone now also lends itself well to figure carving.*
- 115 A GEM OF A ROOM Russell Kemp  
*Higinbotham Hall in the Chicago Natural History Museum holds one of the world's finest collections of cut gems and gem minerals.*
- 119 SMALL ULTRAVIOLET LAMPS Louis H. Roth  
*Low-powered ultraviolet lamps are fast becoming universally popular with amateur collectors everywhere.*
- 122 STORY ON STONE Col. Raymond C. Vietzen  
*Ohio's ancient petroglyphs tell many interesting stories, and should be preserved.*
- 125 OLD MINES  
*Are told about in Bessie Simpson's new guide book "New Mexico Gem Trails."*
- 126 BOOK REVIEWS
- 128 CALENDAR OF EVENTS
- 129 MIDWEST CLUB NEWS
- 138 CLASSIFIED ADVERTISING
- 142 ADVERTISERS' INDEX

Cover.....Book Ends of Kona Dolomite

"Michigan's Cinderella Mineral." A very versatile mineral, as shown by our Cover Photo. It affords lapidary fans ample opportunity for trying out its many possibilities. Photo by Mary Deroche.

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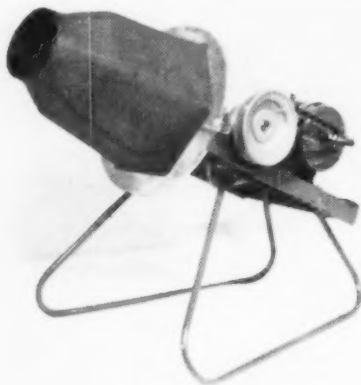
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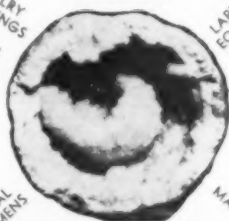
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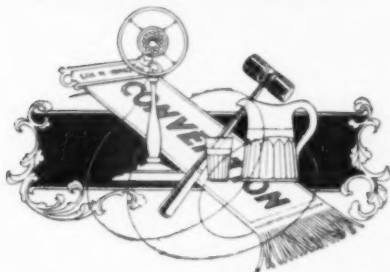
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## Editor's Memo Pad



# 21st Annual Convention and Midwest Federation Gems and Minerals Fair

by Harry H. Sprague

### HIGH LIGHTS OF THE 1961 SHOW

June 29 to July 2  
Saginaw, Michigan

AS the date draws near, the enthusiasm and efforts of the members of the TRICOUNTY ROCKS AND MINERALS SOCIETY are expanding to keep pace with their pledge to make this year's GEMS and MINERALS FAIR and 21st Annual Convention the greatest in the history of our organization.

Our Federation deserves the best on its 21st birthday and for yet another reason. This year's convention is being dedicated to one of its founders, Dr. Ben Hur Wilson of Joliet, Illinois, who was the Federation's first president, and is now editor of EARTH SCIENCE, our official magazine. Since its very beginning his genuine interest and continued activity have done much to stimulate the splendid progress and growth of the "MIDWEST." He is also its permanent Historian and Keeper of the Records.

The SAGINAW COUNTY FAIR ASSOCIATION has given us the space to use, and is helping us in many ways to see that the members of the Federation and the general public will have an ideal setting in which to enjoy the four days of the show.

Do you like fluorescent minerals? Are you interested in getting to know them better? Here you will have that chance. Ultra-Violet Products Inc., of San Gabriel, California are coming and will set up a 1600 sq. ft. display of Black Out Beauty. This will be an educational feature no one should miss as Mr. Westly Mowery, recognized as one of the country's leading authorities on fluorescent minerals, will be on hand to lecture and answer all questions that the public

may wish to ask.

Mr. Harry B. Smith, of Bay City, Michigan, will present his fabulous collection of the antique tools of the Lumbering Days of over 100 years ago. These tools and the hearty men who used them are what made Saginaw one of the greatest Lumbering Capitals in the world.

Dr. Oliver Lohr, the dean of mineral collectors in the Saginaw area, will combine the best of his collection with the best of mine to place on display a thirty-foot long-exhibit in the Educational Building.

Jess McKee, of Harrison, Michigan, will exhibit his collection of Pre-Columbian jewelry and Indian jewelry that he has collected during the six years he lived with the Indians of the West. His Jade and Steatite collection from China will also be on display.

The commercial dealers who have contracted space at the show have also graciously consented to exhibit the best from their private collections: Mr. Dudley Stewart of Boise, Idaho will show his collection of polished Star Garnets; Mr. Earl Martin of Ann Arbor, Michigan has promised to place on display his famous personal collection of Jade and Opal; Mr. William Hiser of Ann Arbor will place on display his general collection; Mrs. Sue Hiser will have a display of floral center pieces using mineral specimens with flowers. Mr. Arthur Breu of Saginaw will show the largest collection of polished Agatized Coral north of Florida. Lyko Minerals of El Paso, Texas will display museum specimens of Mexican Minerals; and the Gem-Lap Corp. of Ferndale, Michigan, will show the lapidary equipment that is available to all from all manufacturers. These are just a few of the special treats we have in store for you.

Our public programs are shaping up to what we think will afford you and the novice public an insight into our wonderful hobby. In the jewelry field, Doris Kemp will demonstrate her wire-lock method; Tolson Radloff will show silversmithing. For the geologist, Dr. Andrew Mozola, of Wayne University, will lecture on the ground water and the general geology of the State of Michigan. Mr. Albert Zeitner, of Mission, South Dakota, will show slides of field trips he has made throughout the United States; Mr. Gerald Irving, of Detroit, Michigan, will present slides of the Geology of the Salt Industry and the operation of the International Salt Mines under the city of Detroit. As a special feature, June Zeitner, Albert Zeitner, Dr. Andrew Mozola, Tolson Radloff, John Thornton, Dr. Ben Hur Wilson and Floyd Mortenson will form a panel, moderated by Mr. William Allaway, to answer any and all questions that the audience can put before them.

Mrs. Alice Kramer, editor of *ROCK CHIPS*, and author of the book "Rocks Where You Step", is in charge of the Editors' Breakfast, which will be held Saturday morning, 7:30 a.m., at the High Life Inn, one mile south of the Fairgrounds. The breakfast will feature all the Ham and Eggs, Toast and Coffee you can eat, Toast Master Russell Kemp, the Bulletin Contest, and as Guest Speaker the one and only "Russ" MacFall, of the Chicago Tribune, who will speak on our responsibilities.

Saturday evening, July 1st, at 6:30 p.m. 375 of the members of the Midwest will sit down at the High Life Inn to a fabulous meal, and take part in the Annual Banquet of the Federation. Guest speakers will be Mr. Clarence Harnden, Manager-Secretary of the Saginaw Fair Grounds; His Excellency John B. Swainson, Governor of the State of Michigan, and for dessert—our own June Zeitner, one of Midwest's most famous personalities.

These are some of the many plans that we have made for your enjoyment. We will also need your help in the form of Society and Individual displays. How about it? Would you like to be a part of this collective endeavor? Then join us please; we will need the beautiful displays that you the members of our great Federation have locked up in your cabinets. Turn the key, open the door, let your hair down, and get your feet wet, enter a DISPLAY, and join with us here in Saginaw.

## MORE HISTORY

### OUR REGIONAL FEDERATIONS

IN our April issue we told you something of the early history of the present Earth Science movement (craze, as some folks might be tempted to call it),—and promised that in our June issue we would continue with an outline of the beginnings of the several Regional Federations.

This, of necessity, will be only a very meager account, as any adequate history of each Federation would, indeed, require a goodly volume. By definition, a federation, in so far as its immediate purpose is concerned, is an affiliation of a number of individual clubs or groups having common interests, into a somewhat loose type of organization for the purpose of promoting their common good by spontaneous cooperative action.

At present our over-all "American" is simple a Federation of Federations operating solely in a similar capacity upon a national basis. It now comprises within its membership six Regional Federations, viz., the California, Northwestern, Rocky Mountain, Midwest, Eastern, and the Texas. It is altogether possible that within the next few years other "Regionals" will come into being and also become affiliated with the "American," as the great geographic distances and the increasing number of affiliated local clubs in some of the larger Federations tend towards unwieldiness and other functional weaknesses. A Southern States, Prairie States, and a North and a South Eastern may yet be in the cards, as well as a Canadian Group. Time will tell if this assumption is correct.

Due to a number of factors, such as the many fine mineral collecting areas, ample leisure time and super weather conditions, widespread growth in the hobby along the Pacific Coast was at first almost phenomenal, particularly in the State of California, and in Oregon. In the great Northwest, Dr. Dake and his Mineralogist magazine no doubt had a very beneficial influence, and as a result a large number of clubs were also organized early in this area.

California, starting with one club in 1931, had grown to approximately 30 clubs in 1942. In June 1935, representatives of a number of clubs met in San Diego and laid the foundations for the California Federation, which held its first convention in January 1936 at Riverside, thus becoming the first Federation so organized.

Not to be outmoded by their neighbors to the South, a number of societies of the Pacific Northwest met in February 1938 at Olympia, Washington to form the second regional federation which became the Northwest, including a number of clubs from Washington, Oregon, Idaho and Montana.

In September 1940, representatives of the Mineralogist Society of Joliet, the Marquette of Chicago, and the Wisconsin of Milwaukee met and arranged for their first organization meeting which was held at the Field Museum in Chicago on December 7, 1940, and elected Ben Hur Wilson as their first president. Their second annual meeting was held in Milwaukee in October 1941. The Midwest now comprises all or parts of 13 states, being made up of more than 100 affiliated clubs.

Late in 1940, Richard M. Pearl, secretary of the Colorado Mineral Society of Denver, began laying plans for a federation composed of the Rocky Mountain States, and an organization meeting was held for that purpose in Denver in August 1941. This has produced many fine leaders in the Mineral Hobby World, and it was at Salt Lake City and at Denver that the present American Federation was organized in 1948.

More recently, the Eastern Federation, composed of the Atlantic Coastal States, was formed and has very rapidly grown into a close knit and effective organization. This year they are to entertain the American national convention at Miami, Florida, which promises to be a very outstanding meeting.

The Texas Federation, also a late comer, is now growing rapidly and promises soon to become commensurate in size and importance with the great "Lone Star" State which excels in so many ways.

Who can say where the next Federation will spring up, and when it does one may be sure that it will be promptly welcomed into the great American which is attempting to exert a wholesome directive force that will be beneficial to all concerned.

---

**"Midwest-American"**  
**DES MOINES**  
**'62!**

## Rip Rap

Until Yuri Gagarin and his successors make more detailed observations as they hurtle through space, we shall have to depend on indirect evidence that life exists on other planets. Such evidence is afforded us by meteorite fragments found in France in 1864 and recently analyzed by a team of U.S. scientists. Molecules from the fragments were broken down electronically in a mass spectrometer into their components. Each molecule was found to have a carbon content in the range of 19 to 23 atoms, similar to molecules known to be produced only by living matter. Compounds of the carbon with hydrogen were paraffinic in nature and resembled the molecules in the skins of grapes and apples.

The American Power Conference in Chicago this spring heard the consensus of 40 experts that by 1980 about 25% of U.S. power generating capacity may be nuclear. The cost of fossil fuels is expected to rise partly because of their importance in synthetic chemistry. The cost of nuclear fuel is expected to drop.

The success with which substitutes for some natural products have been synthesized in recent years has an unsettling effect on our scale of values. Take precious stones, for example. General Electric is reportedly well on the way to developing industrial diamonds up to 1 carat in size. J. R. Wood & Sons, Inc. of New York induce color (shade cannot be predetermined) in diamonds by subjecting them to electron bombardment by a cyclotron. Carroll Chatham of San Francisco has produced synthetic emeralds as large as 1200 carats. These fluoresce dark red under an ultra-violet light, whereas natural emeralds do not fluoresce.

Even star effects are obtained in synthetic rubies by inclusion of a small amount of titanium oxide in the powdered alumina prior to flame-fusion (Verneuil process). During cooling in an atmosphere of oxygen the titanium separates out in the form of microscopic needles of synthetic rutile which arrange themselves symmetrically in relation to the three axes of the ruby crystal. The effect is that of a star ruby. Synthetic stars can be distinguished from natural, however, because of the greater number of their rutile needles.

"Planet Earth" is the title of a 13-film series produced by the National Academy of Sciences.

### How About This?

A **SPLENDID** suggestion has come from the program chairman of one of our smaller clubs, saying that on several occasions they have had guest speakers coming to them from some little distance and at some expense to themselves for gas, meals, etc., who however have absolutely refused to be reimbursed for their coming in any manner.

"Why not," she asks "give them a one year, or perhaps even a three year subscription to Earth Science Magazine, the official publication of the Midwest, which will be a constant reminder of our appreciation for their kindness in our behalf?"

Here, we believe, is a satisfactory solution for this common problem which at the same time will contribute to the welfare of the magazine which attempts to serve the Federation in so many ways. Why not try it?

### MORE ON COESITE

IN our December 1960 issue we discussed the newly recognized mineral, coesite, and its discovery throwing new light on the origin of the famous Rieskessel crater-like depression in Bavaria.

It was there stated this occurrence and in Meteor Crater, Arizona were the only two places where it was known to exist. In Bavaria it was identified from samples of shock granite which has been called "suevite."

It has since been announced by the U. S. Geological Survey that there are now four places on earth where coesite is known to occur. It has been found in the Al Hadida iron meteorite crater in east central Saudi Arabia, which is about 300 feet in diameter and 40 feet deep, being the smallest of the three known meteorite craters. The Arizona depression is about 4000 feet across while Germany's Rieskessel, the largest, is some 17 to 18 miles in diameter. The Al Hadida crater is in quartzose sandstone of unknown geologic age, partly buried by drifted desert sand.

It has also been found in an A-bomb crater at the Nevada test site, made by an atom bomb explosion in 1955, set off by a 1.2 kiloton atomic device (equivalent to 1,200 tons of TNT) which was detonated at a depth of 67 feet below the surface of the ground. This, then, is the 4th place where this exceedingly rare mineral may be found.

### WHO MAKES OUR CLUB SUCCESSES?

XXVX though my typewriter is an old model, it works quite well except for one of the keys. I have wished many times that it worked better. It is true that there are forty-six keys that function well enough, but just one key not working makes the difference. Our club is like a typewriter. You may say to yourself I am only one person. But you make a difference. To be effective the club needs every member's active participation. So, the next time you think your efforts are not needed, REMEMBER MY TYPewriter, and say to yourself "I am a key in this club, and I am needed very, very much."

Courtesy: Miami Glaciator.

### METEORITE STRIKES DWELLING

A REPORT comes recently from Klaipeda, Lithuania, that a small meteorite hit a dwelling and crashed in through a window, which indeed is considered a very rare occurrence in the history of meteorites.

It was identified as a dark gray mineral seldom found on earth in nature, known as a carbonaceous chondrite, weighing about 9½ ounces. Traveling at the speed of several miles a second when they reach the earth's surface, these objects have tremendous penetrating force, often burying themselves where they are seldom found.

### Something New to be Added

In keeping with our policy of steadily improving EARTH SCIENCE magazine, in so far as possible, by making it more serviceable to our readers, we propose, beginning with our forthcoming August issue, to add a new feature under the heading of EARTH SCIENCE EDUCATION.

This feature will be studies of an informal nature. That all may derive benefit therefrom, there will be short articles or discussions slanted towards the objective of the individual acquiring new facts or information with each issue.

These lesson articles will be on two levels, the first elementary and the second advanced, in order that a greater number of our readers may benefit thereby. Have you any suggestions to offer?

## INTERESTING LETTERS

Many valuable suggestions continually come to the Editor's desk by way of letters from our readers for which we are always grateful. We are glad to publish as many of these as our limited space will permit. Occasionally we have one, as the following from Mr. Reid, which we feel should be very helpful to our lapidary friends, especially those who may be interested in tumbling minerals.—B.H.W.

Dear Earth Science Editor:

I enjoyed reading a short article in the February issue of "EARTH SCIENCE" by Mr. Frank Smith of Posen, Michigan on using sawdust for polishing. I used sawdust for polishing until I discovered it would swell up so much that it would hinder the polishing operation and retard the tumbling action by producing too much bulk. I have been using something I like much better, and get much better results, in fact I am able to get super gloss after the polishing operation. I use ground COB GRIT, which is just ordinary ground corn cobs. It does not swell, and we believe it helps carry the polish to the stones in a much better manner than sawdust, for the reason every particle of the grit is coated with tin oxide.

We live in the country where they make this COB GRIT and ship it by car load to the Eastern States where it is used to polish steel. I figured if it would polish steel, it would polish agate. I tried using it and the results have been amazing. I put very little of it in the polishing operation with tin oxide, but after the polishing operation, I use nothing but the GROUND COB GRIT, and tumble the stones with this grit for at least 5 hours. I have just finished a batch of Lake Superior Agates, and they have a wonderful super gloss, that I have been unable to get with any other method. Try it sometime. If you are unable to get the cob grit I will get it for you.

Here is another tip. We use a gallon paint can (new one). We line it with rubber but WE USE NO GLUE. It is wedged in, and will not come out. You can however remove it anytime for cleaning. Replace and you are ready to go again. We had a can running for over 500 hours, cleaned the lining twice, replaced it, and it is still good for many more hours. It saves a lot of mess trying to glue a rubber lining in a gallon can.

A. I. REID, Stockton, Ill.

## CONCHOLOGY WAS ONCE A POPULAR HOBBY

"Pray Tell, what is Conchology?"—some of you will ask. It is the study of modern shells or mollusks, a branch of zoology, and one who specializes in this field is a conchologist. In a sense we might say, conchology begins where invertebrate paleontology leaves off. This is like saying geology begins where astronomy ends, which is about the same difference.

During the latter part of the 19th century, and earlier in the present century, this was a very popular subject, and a serious hobby with many people. There were then almost as many conchology clubs and societies in existence as there were mineral and geological societies, and their members collected and studied shells almost as assiduously as our mineral fans do their minerals today.

Many exceedingly fine collections were made, some of which now grace the cabinets of our larger museums. However, we have yet to hear of a conchological society in existence or functioning as of now, but no doubt there may be a few that we do not hear of. We hope so, for nothing can be more beautiful than a fine collection of sea-shells well cleaned and polished.

We shall look forward to the day when shell collections will be exhibited along side of fossil collections, thereby illustrating the similarity and relationship of the old with the new. Indeed, many species of shell life in existence today may be found to be identical with those preserved as fossils which lived millions of years ago, with apparently no difference in their structure or functions.

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# MIDWEST FEDERATION GEMS AND MINERALS FAIR AND 21ST ANNUAL CONVENTION

Saginaw County Fair Grounds, Saginaw, Michigan  
June 29, 30, July 1, 2, 1961

The Tri-County Rocks and Minerals Society, Inc. of Saginaw, Bay, and Midland Counties, Michigan, extend a most hearty invitation to the 94 member clubs of the Midwest Federation of Mineralogical and Geological Societies to participate in the 1961 Gems and Minerals Fair. Fifty thousand square feet of floor space have been reserved for your use with an additional 8,000 square feet to be held in reserve. Five buildings for sure, and a sixth in reserve. Will we need this much space? Yes, if you, the member societies and the individual members of the Federation, support the Federation and your annual show.

This is your chance to show the Federation that yours is an active society. This is your chance to prove to yourselves that it's fun to belong, to make new friends, to meet old friends, to see the best of the Midwest collections on display. This is a chance for bulletin editors to get together, to sit down at the annual banquet to a wonderful meal, and top it off with a most distinguished and famous "Mid-Westerner" as guest speaker—the fabulous June Zeitner of Mission, South Dakota.

Send in your reservations as soon as possible to the following chairmen:

#### Society and Individual Exhibits

**DONALD L. SOMMERFIELD**  
1423 North Carolina  
Saginaw, Michigan

#### Commercial Space

**DORIS L. SPRAGUE**  
11307 Swan Creek Road  
Rt. 5, Saginaw, Mich.

#### Junior Exhibits

**WILLIAM FORBES**  
403 Tittabawassee  
Zilwaukee, Mich.

#### Judging and Awards

**EVERET CAVER**  
523 N. Jackson St.  
Bay City, Mich.

#### Editors Breakfast

**ALICE KRAMER**  
303 Harrison St.  
Midland, Mich.

#### Special Exhibits

**HARRY H. SPRAGUE**  
11307 Swan Creek Road  
Rt. 5, Saginaw, Mich.

#### Banquet

**DORIS L. SPRAGUE**  
11307 Swan Creek Road  
Rt. 5, Saginaw, Mich.

#### Registration

**CORNELIA DEMERRITT**  
1913 Essex St.  
Saginaw, Mich.

#### Hospitality

**CECILE JOHNS**  
4484 King Road  
Saginaw, Mich.

#### Publicity

**DR. B. H. VAN HORNE**  
1314 Wallen St.  
Midland, Mich.

#### Program

**SCOTT WILSON**  
297 Donaghue Beach  
Bay City, Mich.

#### Housing

**ELLEN B. SMITH**  
1413 Sixth St.  
Bay City, Mich.

All societies are being circularized with complete information. All other interested parties please contact the General Chairman, Harry H. Sprague, 11307 Swan Creek Road, Rt. 5, Saginaw, Mich.



## Kona Dolomite

By ROBERT MARKERT



1960 Midwest Field Trip Convention party collecting Kona dolomite specimens and other minerals at Lindberg's Quarry.

THE "Cinderella Mineral" referred to by John Mihelcic in his article in the May, 1960 issue of "THE CONGLOMERATE" has fully at long last come into its own as one of the hottest recent "finds" in the Midwest if not in the entire United States.

In answer to this quote by a leading editor: "In the Midwest there are just no gemstone collecting areas worth writing about", I would like to point out that although the average hardness of Kona dolomite is in the neighborhood of 4 to 4½, and because of this hardness it does not rate as a true gemstone, this stone is now

accepted and worked by lapidaries all over the country. It is easily cut, worked, shaped, sanded, and polished into very colorful cabochons and free forms for necklaces, pendants, bolo ties, and other miscellaneous items, that are not subjected to a lot of abrasive action.

I have seen bookends made of Kona dolomite that will match the beauty of any other material on the market. I have seen others and also own a sphere of Kona dolomite that will match the prettiest of any known mineral.

I have seen a profusion of scenic

splendor in many of the slabs that I have cut. Animated and human figures appear as well as panoramic mountain scenes. Cut perpendicular to the scenes or strata a beautiful display of color may be obtained.

Our Michigan Kona dolomite has the basic color of pink to red, with beautiful patterns of brown, peach, and black interlacing most specimens. This material is not all dolomite, but for the most part an admixture of the same with some silicas.

I would like to quote from "*The Geology of the Lake Superior Region*", in a report of THE U.S. GEOLOGICAL SURVEY 1911, by C. R. Hise and C. K. Leith.

In part it reads: "LITHOLOGY.—The Kona formation is dominantly a dolomite, but interstratified with this are layers of slate, graywacke, and quartzite with all gradations between the mechanical sediments and the pure dolomites. Thus there are finely crystalline dolomite, cherty dolomite, quartzose dolomite, argillaceous dolomite, dolomitic quartzites, dolomitic slates, dolomitic cherty quartzites, and dolomitic chert. The dolomitic beds range in thickness from a few inches to many feet, but even the most dolomitic beds contain thin cherty layers, mingled with which in some places is

clastic material. In color the rocks vary from pink and red to dark brown. Because of the impurities of the dolomite the weathered surface has very characteristically a jagged appearance, due to the solution of the dolomite and the consequent protrusion of siliceous phases.

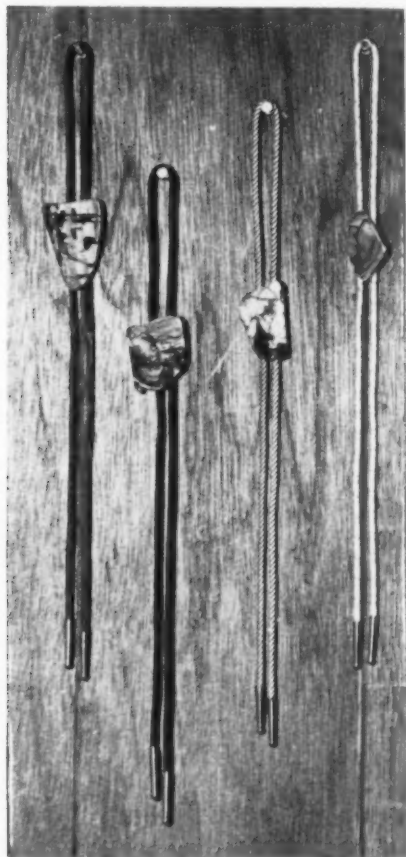
"METAMORPHISM.—The dolomite has usually yielded to the folding without prominent fractures of cleavage, but it has suffered a minute shattering and is cemented by finely crystalline quartz or coarsely crystalline dolomite or the two combined. The slate layers usually have a slaty cleavage and many of the graywacke, quartz, and chert quartz layers are brecciated. These breccias where schistose, are difficult to distinguish from conglomerates. The completeness of this shattering and brecciation was appreciated only by a study of the thin sections, where every one of the numerous slides shows the phenomena mentioned to a greater or less extent. Not a half-inch cube has escaped."

The 1960 Twentieth Annual Field Trip Convention of the Midwest Federation of Mineralogical and Geological Societies included Lindberg Quarry on its field trip itinerary, and 14 different field trip groups, totaling more than 750 persons, moved into the



Paper-weight block of cut and polished Kona dolomite. Note the great variety of beautiful figure patterns on the upper surface.

quarry to collect for 2 hours on 4 consecutive days. Literally tons of this material found its way into lapidary shops all over the Midwest. Many people who did not participate in the convention trips and had seen Kona dolomite in the hands of collector friends visited the quarry for first hand collecting of the material.



A beautiful array of 'Bolo-ties' ornamented with polished Kona dolomite, from the author's collection.

Unfortunately in most quarry field trips, little or no regard is shown the quarry operator. After several near accidents and some unscrupulous collecting by individuals and dealers, and because of insurance rates and laws, it was necessary for Lindberg

Brothers, the quarry owners, to close the quarry to collecting.

Your author became alarmed over the possibility of removing this material from the lapidary market, so a friend, Clyde Steele, and myself have formed a company, whose primary purpose will be to assure the dealers and Rock Shops of the country a constant and regulated supply of Kona dolomite. Collectors may also obtain this material through exchange with members of The ISHPERING ROCK & MINERAL CLUB.



Kona dolomite sphere resting upon a dias block of the same mineral from the author's personal collection.

I am happy to say that no action by any person during the recent Ishpeming convention caused the closing of the quarry. The unscrupulous actions of some post-convention collectors brought this about.

Editor's Note: This article, which also appeared in Lapidary Journal for April 1961, emphasizes the lapidary value of Kona dolomite. In a later issue Mr. William D. Kelly will discuss this interesting material from the paleontologist's viewpoint.

# Why Attend A Gem Show

June Culp Zeitner

*"Breathes there a rockhound with soul  
so dead,  
Who never to himself has said,  
'This is my own, my Federation  
Show'."*

YES, sadly, there are many rockhounds who do not realize the value of conventions and shows and therefore never participate in them.

Actually all rock shows, from the neighborhood club display to the biggest Federation show, accomplish so much that the complete impact is not evaluated.

What can you as an individual gain by attending a Federation Show?

1. You can have a chance to be an active member of your hobby by entering displays of your rocks and your work.

2. You can compare and contrast your workmanship, your tastes, your abilities, with those of your fellow club members, and the work of your club with that of other groups.

3. You will have the best opportunity to see what's new in specimens, gem machines, methods. You may buy what appeals to you from dealers selected by the show committee.

4. You can garner a notebook full of new ideas. Ideas about show cases, display materials, arrangements, lighting, new uses of old materials, new places to go, people to meet, things to do. In short, in a brief time you can take in a variety of fresh thoughts it took hundreds of people and thousands of hours to gather.

5. You can see valuable and famous items and collections seldom shown to the public.

6. You can increase your knowledge of the particular branch of the hobby which appeals most to you as well as become acquainted with the other fields this vast hobby encompasses.

7. You will meet old friends in the hobby and make new friends rapidly.

But aside from helping individuals, the shows perform several major services to club groups and the hobby as a whole.

Clubs become better acquainted and learn to work together in working on shows or displays for shows. Working on such projects enables the club to realize the variety of talent and material it has available.

By friendly cooperation each club has an opportunity to build on the experiences of other clubs, while friendly competition brings out the best each group can offer.

The hobby as a whole gains importance and recognition by shows. Publicity brings many casual visitors out of pure curiosity. Visitors, often amazed by what they see, gain a new appreciation of rocks and a real admiration for rockhounds. They tell their friends of this interesting hobby. They visit clubs and shops. They become rock conscious — and shortly after each show a whole new crop of rockhounds is ready to enrich the hobby.

All these benefits don't begin to touch on the pure fun of auctions, swaps, field trips, banquets, campfires.

Why not see what your hobby can do for you and what you can do for your hobby? See you at the Midwest Show in Saginaw.

**"Midwest-American"  
DES MOINES  
'62!**

# Petoskeys—Cabs to Carving

By BETTY RIBERDY AND EDITH SMITH

LIKE all art, lapidary thrives on new ideas and new techniques. To the beginning rockhound a beautifully polished cabochon from his favorite stone may appear the ultimate in workmanship. A perfect cab is classically simple in design. It says only, "Look on me for I am beautiful."

After the rockhound attains this goal his progress may lie along the line of ever more rare and choice specimens and better methods of cutting and polishing. His art may be described as objective.

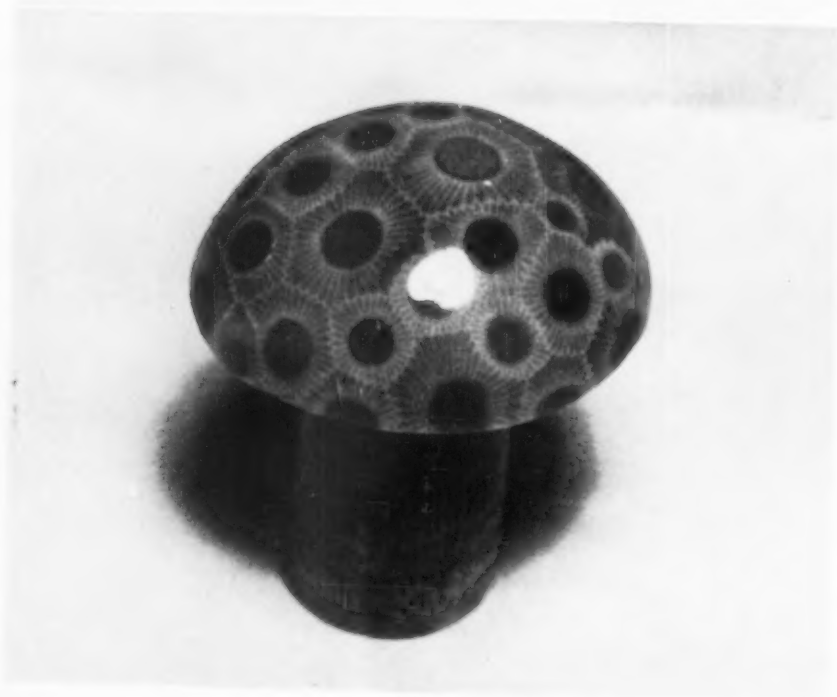
In contrast, lapidary art grows subjectively as the artist introduces his own personality into the end product. Jewelry design satisfies one urge for creative expression. The subject of this article is the urge to confer on a piece of raw stone an *identity* (aside from or in addition to beauty), which has its inception in the brain of the

artist. Since the tools he has learned to use are shaping tools, he confers this identity by carving the stone into a shape corresponding to a concept or image already existing in his mind.

What are the practical problems in translating this urge into reality? First, perhaps your own attitude. When classes in carving were first introduced in the Michigan Lapidary Society, many members just knew they could not carve. But after a few hours of work in class these same people found, to their great pleasure, they had been able to turn out small three-dimensional figures of birds and animals.

Preliminary work with soft materials such as alabaster and pipestone is desirable. These can be worked with hack saws, knives, files, and sandpaper. The beginner needs a model in order to become familiar with proportions.









Jade, agate, and almost any material that will not crack under pressure can be used for carving. We in the Midwest use Petoskey stones extensively because they are readily available to us and because we like their beautiful rhythmic, varied patterns.

When the artist graduates from soft materials to relatively hard Petoskey stones, jade, etc., tools become more important. If a grinding wheel is the only tool available to you, don't be discouraged. In addition to other figures, the butterfly and mushroom pictured here were carved with this trusty tool. At first, the job demands a lot of patience. It's so easy to grind off a turtle's foot while shaping his head, and no trick at all to knock off his short stubby tail!

You will probably proceed at first mostly by trial and error, working out your method as you go along. For example, if you wish to carve a frog, pick out a stone nearest the size and shape of the finished figure you have in mind. If it has a rounded base, flatten it by slicing or grinding to make it solid. You can start on the back with two round cuts to outline the legs, or you can make a groove cut down the front and start work around the head.

If you need to cut out a good-sized piece, a short-cut is to make three saw cuts and then, inserting a screwdriver in the slots, crack out the excess stone. This saves on grinding. Polishing on velvet, as described by William Gelston in the June 1960 issue of *Earth Science*, is the best technique for Petoskeys known to date.

The use of a flexible shaft tool permits greater latitude and precision in design than the grinding wheel. (Precautionary note: Do make a point of donning goggles before beginning work with this tool.) The owl, snake, dog, and mouse pictured here were carved with a flexible shaft tool.

To begin a carving, place a pattern of the desired object on the stone and outline it with an aluminum or brass marking pencil. (This goes for shaping with a grinding wheel too.) Saw away as much excess material as pos-

sible. Then further preform with a silicon carbide separating disk mounted on a mandrel which is tightened down into the chuck of the flexible shaft tool. Dental supply houses carry these disks and also a number of burrs and mounted grinding wheels.

The separating disks are used for cutting away excess material as is a knife in whittling. A slight stream of water is kept flowing over the stone during the cutting and grinding to keep the dust down and to cool the stone.

After preforming, the figure is rounded into shape and smoothed with small grinding wheels mounted on the shaft tool. Sanding is done by hand with successive 220, 320 and 600 grit abrasive papers which can be easily cut or torn into small squares of a size suitable for manual sanding. All details of eyes, ears, and mouths on the little figures (mouse, snake, dog, owl) are put in with needle files. Polishing is done with tin or cerium oxide mixed with a solution of oxalic acid. Velvet is not adaptable to buffs small enough to fit  $\frac{1}{8}$  or  $\frac{3}{32}$ " mandrels but felt disks obtainable from dental supply houses, hardware and department stores may be used.

In polishing the carving, a rheostat is necessary to slow the speed of the flexible shaft tool to avoid heating and fracturing the stone. Don't slight the small details of form and features. Well executed, they add immeasurably to the appearance of the whole.

Nothing gives more enjoyment and satisfaction than to create with your own hands. To see a raw block of stone begin to take shape and finally emerge as a three-dimensional carving is a moving and very exhilarating experience. Your carving is yours alone—there will never be another one just like it.

Do not fear a dearth of ideas. So very many beautiful things can be made from small pieces of material that after a few carvings, the ideas begin to come so fast that it would be impossible to execute them all in a lifetime.

# A Gem of A Room

By RUSSELL KEMP

TODAY, a "GEM OF A ROOM" is the proper name for the H. N. Higinbotham Hall, Hall 31, of the Chicago Natural History Museum, as it houses one of the world's most comprehensive collections of gems and jewels. For the visitor interested in gems, jewelry and lapidary work this is a room of brilliant splendors. In all, more than 3000 specimens are displayed in "jewel-box" cases, illuminated by concealed fluorescent lighting, which greatly enhances their brilliancy. The principal collection is placed in eight island cases with seventeen smaller cases built in the walls to contain the jewelry and three special collections.

The gem collection is one of the most complete and valuable of any in existence. It contains nearly every

known variety of precious and semi-precious stones in the finest cut examples such as crystals, cleavages, and rolled grains. It also contains examples of the better kinds of ornamental stones as distinguished from precious stones. Many of these are shown rough, in plain polished form, and as carvings. Supplementary collections illustrate the folklore of precious stones and show some of the native forms of gold, silver and platinum, the metals in which valuable jewels are usually mounted. Among the specimens on exhibit are a number of fine Ceylonese sapphires of several colors, a green sapphire from Australia and a blue variety of tourmaline from Brazil, known as Indicolite. Other gems include rubies, zircons, topaz,



Higinbotham Hall: Interior view showing Tiffany stained glass with mermaid rising from the sea.

and specimens of kunzite, chrysoberyl, garnet, emerald and diamond. In addition, there are exhibits, cut and polished, of almost all gems of interest to people with gemstone interests. High on the wall facing the entrance is a stained glass window by Tiffany which represents a mermaid rising from the sea.

Jewelers arbitrarily divide gems worn for personal adornment into two classes, precious and semi-precious. They regard the diamond, emerald, ruby and sapphire as more valuable and attractive than other gems and class them as the only true precious stones. All other gems are classified as semi-precious. This division is arbitrary, since a semi-precious stone of high quality may easily outrank in beauty a precious stone of inferior quality. Stones rarely used for personal adornment, but used for other decorative purposes, classify as ornamental.

### ENGRAVED LIKENESS OF A KING

The most interesting specimen among the diamonds is one which has engraved upon it in intaglio a bust of William II of Holland. This ten carat stone is pear shaped and half an inch in length. The engraving is so delicate that it has been necessary to mount a magnifying glass over it. It is the work of the famous diamond cutter, De Vries of Amsterdam, and the work, it is said, consumed all his spare time for five years.

There are many blue, yellow, and white sapphires and rubies from Ceylon, Burma, Russia and North Carolina. There are six large star sapphires, three of which weigh more than 130 carats each, and two good star rubies. Star quartz and star garnet appear among the semi-precious stones. With the cut emeralds there are uncut crystals of the gem, among them three from Brazil, three to five inches long, of rich emerald color with



Ornamental Stone: Screen case of gems on the north wall of Higinbotham Hall.

many transparent portions. The semi-precious stones are present in great variety. Many display such brilliancy that one may wonder why they have been classed as semi-precious.

#### A NINETY POUND TOPAZ

The collection of blue, white, pink and golden cut topazes is unusually choice and complete. A gigantic topaz crystal which weighs 90 pounds was, when received, the largest gem topaz known (several larger ones have since been collected). Likewise noteworthy are the numerous beryls and aquamarine gems which differ from the emerald only in color. The largest is the unusually perfect Crane aquamarine which weighs 341 carats.

#### THE SUN-GOD OPAL

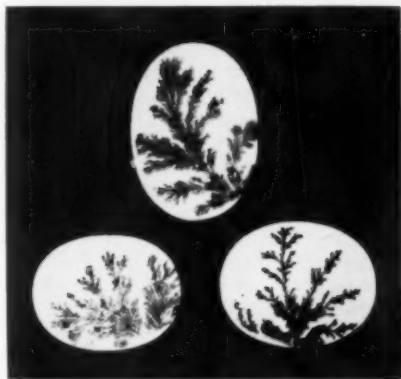
The several varieties of precious opal are given adequate representation. From a historic standpoint, the most remarkable among them is the SUN-GOD OPAL which was kept in a Persian temple for three centuries. It is not known that it had any part in the temple ceremonies but, from the manner of its mounting and its traditional name, it may have been connected with the worship of the sun. It is cabochon cut, one inch long and three-quarters of an inch wide. It is carved to represent a human face and is mounted in a cup of gold inscribed with black figures of Oriental design. Long tapering prongs of gold extend radially from it. The resemblance to a miniature sun and its rays is striking. The opal is of Mexican origin but the carving does not have Aztec characteristics. It came from the collection of Phillip Hope.

The better kinds of ornamental stones, such as alabaster, selenite and agate, commonly used for decoration other than personal adornment, are represented both in the rough and in polished, cut and carved form. Among the agates, the moss agates are illuminated by transmitted light which brings out well their "landscape" and other imitative patterns. A rock crystal screen shows "THE FINDING OF MOSES" elaborately carved (in

Vienna) on a thin section of quartz with delicacy and in great detail; but like many medieval masterpieces it represents a gross anachronism, for Pharaoh's daughters are dressed in the costumes of medieval princesses, and in the background there appear a number of castles of types contemporary with the artist's rather than Moses' time.

#### ANTHROPOLOGICAL ASPECTS

Gems and jewelry have always been of considerable human importance and interest, whether as signs of wealth and social position, or as means of personal adornment. They therefore form a major element in anthropological studies, both for the archaeologist and the ethnologist. Practically every culture, primitive or civilized, ancient or modern, includes the use of precious stones or trinkets in one form or another.



Moss Agate (India) exhibited in Gem Room.

#### KISH JEWELRY 5000 Years old

The oldest pieces of jewelry in the hall are gold from KISH, the ancient Babylonian city. These are dated from 3000-2500 B.C. Incidentally, gold is not only a favorite material for jewelry, but one of the first metals worked by man. Objects fashioned from gold are found in the earliest civilizations of the Near East.



Filigree Jewelry of India. Lavish use of pearls and rubies.

#### EGYPTIAN GOLDSMITHS' ART

The Egyptian gold jewelry varies in fineness from 17 carats to 23.5 carats. The latter grade is from the Graeco-Roman period in Egypt. This period also saw an increased use of brightly colored stones on jewelry and a decline in the goldsmiths' workmanship. Amethyst, bloodstone, plasma, garnet, onyx, jasper, carnelian and pearls were commonly used, as well as glass imitations.

The delicacy of ancient objects created by goldsmiths of Etruria, Italy, from the 7th to the 5th century B.C. has rarely been equaled. During this time quality of workmanship was prized rather than display of colorful stones. The technique of applying fine gold granulations and looped and twisted wire reached its peak at this time. After the 5th century B.C. the quality of the goldsmiths' workmanship grew increasingly inferior.

#### JEWELRY IN EARLY AMERICA

A thousand years later (A.D. 500), and a thousand years before Columbus came westward across the Atlantic, the Peruvian Indians in South America had already discovered the process of metal working. This knowledge spread northward into Mexico, and patterns became more intricate with the discovery of welding, alloying, casting and annealing. Examples of metal

work from Colombia are on display in the GEM ROOM. The draftsmen of Quimbaya used gold and an alloy of gold and copper, displaying extraordinary delicacy in execution of detail and complex patterns.

#### FILIGREE AND ENAMEL WORK OF INDIA

Then there is the more modern (in point of time) jewelry of India and Africa. The Indian jewelry is characterized by delicacy of workmanship, lavish use of color, and an impression of elaborate ornamentation.

The delicacy is due mainly to the filigree work in which the goldsmiths of India are masters. The flexibility of gold and silver permit the drawing of wires of these metals through increasingly smaller holes in a steel plate until the desired diameter is obtained. These wires are then bent into patterns being used, and are soldered together one by one under a blow pipe.

A great deal of the colorful effect of jewelry of India is achieved by the application of enamel. Such pieces are rarely made directly for a customer but are ordered by rich jewelers. Customers select designs from a book of patterns by an artist. The goldsmith then forms the article to be enameled, and afterwards passes it on to the engraver who engraves the pattern. The article then goes to the enameler

*(Continued on page 131)*



## Small Ultraviolet Lamps and Portability

By LOUIS H. ROTH

THE use of low-powered ultraviolet lamps for instant photoluminescence in the field has become almost universally popular with the amateur mineralogist.

During the uranium and scheelite rushes of some years ago the need for a portable shortwave lamp unit was met by development of a compact unit which produced small quantities of filtered shortwave ultraviolet radiations. It was powered by a small 6-volt lantern-type battery which in turn supplied current to an electronic device known as a "vibrator." The "vibrator" changed the battery's direct current (d.c.) to square sine wave. A so-called "transformer" then increased the 6 volts to many hundreds of volts of "alternating current." The tube, a very thin horseshoe affair with but two electrodes and a minute globe of mercury, produced shortwave ultraviolet radiations. The use of a very thin filter completed the lamp.

This special lamp was allegedly used quite extensively by amateur and professional prospectors intent on making their fortunes. It has been claimed that millions of dollars worth of scheelite was discovered with its aid. There is no record of how much was discovered by the uranium hunters since, unfortunately, the lamp could not disclose primary ores. Be that as it may, this lamp served its purpose and I daresay that there must be thousands still around in attics and cellars.

This lamp, however, could not be used with regular 110-125 volt, a.c. household current or with an adapter and batteries. Nor was it possible to convert it to any other use. It was not a practical lamp for the amateur mineralogist although many found themselves in the possession of these devotees of fluorescence. Even during the "rushes," better lamps and better methods of effecting portability were known and used, for example, "storage" and "hot-shot" batteries with

converters or inverters and adapters with "b" batteries.

It must be noted that with the exception of the small portable lamp unit mentioned, the lamps and equipment used in the field were on the heavy side. And they were expensive too. Again they were not intended for the amateur mineralogist but were designed for the prospector.

Within the past few years, there have been developed small longwave and shortwave ultraviolet lamps utilizing special and relatively inexpensive tubes. These small tubes produce fair quantities of either type of ultraviolet radiations. Best of all, these small lamps are extremely versatile. They can be used anywhere and everywhere. All of these small lamps work on regular 110-125 volt, a.c., 60 cycles household electricity. In fact, they may be said to be *portable per se* because of their extreme small size and weight.

It must be remembered that an ultraviolet lamp whether it produces shortwave or longwave radiations uses a so-called "mercury vapor" tube. Whether a tube produces so-called fluorescent light, or germicidal effect or erythematous effect or so-called blacklight, it is essentially a tube which produces these effects of light because of mercuric ionization. There are exceptions, of course, because so-called "blacklight" tube is used to produce longwave ultraviolet and is produced by special incandescent tubes or bulbs.

The germicidal tube which is used to produce *shortwave ultraviolet* does so incidentally! Germicidal tubes are used to kill bacteria and they do a pretty good job too! The so-called "blacklight" tube is used to produce *longwave ultraviolet* for industrial purposes. These tubes may be obtained with integral filters very reasonably but for good mineral fluorescence, it is essential that a separate filter be used. The differences between a germicidal, "blacklight" and a fluorescent

tube lie solely in the type of glass used and in case of the latter two in the phosphor coating also used. The germicidal tube uses no phosphor whatever.

Some writers also mention different gases that are used in these tubes but thus far the writer has been unable to find any difference whatsoever.

Any lamp which uses any of these tubes is essentially a lamp for alternating current (a.c.) but with *certain precautions and restrictions* direct current (d.c.) operation is possible. Thus a shortwave or longwave lamp using the well-known G4T4/1 (4 watt Germicidal) or F4T4/BL (4 watt "Blacklight") tube can be made operable with direct current. Theoretically, direct current gives the highest lamp efficiency but in practice it is another story. The direct current discharge must be stabilized with a *resistor*, the energy dissipated is lost and the overall efficiency is lower than for an a.c. operated lamp.

With direct current operation the mercury-ions move towards the cathode-end (negative) of the tube. Eventually the mercury at the anode-end (positive) is evaporated and moves to the cathode-end. As a result the emission of 2540 A.U. radiation (short-wave) at the anode-end *decreases* for lack of mercury atoms, and *that part of the tube emits less light or none at all.*

Hence with the use of direct current, the lamp's polarity *must be reversed* periodically. This is readily accomplished by reversing the lamp's plug from time to time. The so-called "Adapter" used with two (2) 45 volt "b" batteries is a *resistor* essentially.

A "b" battery is merely an aggregation of small cells. As a general proposition such an aggregation which delivers 22½ volts is called a "b" battery. Thirty (30) individual cells connected in *series* are designated as a 45-volt "b" battery.

A "b" battery cell produces direct current as a result of a chemical reaction within the confines of the container, current flowing between the metal container (acting as an elec-

trode) and the center electrode (usually a carbon rod). The individual cells are troubled with *polarization* which causes another current to flow in an opposite direction. Hence such batteries can not be used for long periods of time. Use must be of an intermittent nature. The batteries must be recharged frequently. In time, however, whether used or not, they simply deteriorate due to the constant chemical action.

It is therefore most important when using "b" batteries with a small 4-watt lamp employing "radio type" tubes such as the G4T4/1 and F4T4/BL, to make certain that the batteries are "fresh" and that they are "heavy duty." Otherwise, the use of batteries becomes an onerous expense. The writer does not recommend the use of an adapter and "b" batteries with any other tubes than indicated above because of the excessive waste of direct current with tubes of other types, not excluding so-called 4 watt "blacklight" tubes of the T-5 class.

As noted above the short or long-wave lamp in practice works best with alternating current, hence, if at all possible, the lamp owner should explore the possibility of using his lamp in the field with alternating current. A direct current source may be used to produce alternating current and conversely an alternating current may be changed to direct current. There are many ways to do this. A comparatively inexpensive and fairly efficient method is by the use of a so-called "converter" or "inverter." The words are used interchangeably and their definition is for all practical purposes, the same.

Just what is a converter? In the electronic sense, it is a device which converts one source of electrical energy (i.e., direct current) to another (alternating current). Suppose the ultraviolet lamp requires between 110-125 volts, 60 cycles of alternating current and between 80 and 100 milliamperes to operate efficiently. Actually it does if 'he "radio type," 4 watt tubes are used. This means that it needs from 8.8 watts to 12.5 watts of electrical energy.

Suppose a direct current source is available from 2 volts up. We must change or convert this direct current to alternating current. We do this by means of a so-called "vibrator." We can also do it by means of special transistors. The "vibrator" takes the direct current and changes it to a square sine wave, oscillating at any given number of cycles per second. In the case of our lamp, the "vibrator" will cause 60 cycles or 120 alternations per second to oscillate in the primary circuit. A transformer consisting of two coils, the smaller one connected to the "vibrator," then by means of induction and depending on the number of turns of copper wire in the larger coil, the voltage induced will be considerably greater than the voltage in the "vibrator" circuit. For all intents and purposes, the voltage now available from the larger coil is *alternating current*. It may be much more than required even if the transformer was designed for the delivery of 120 volts. The use of capacitors (condensers) either in the primary circuit (smaller coil) or in the secondary circuit (larger coil) will cut down the voltage and smooth out the very high peaks.

However, no matter how good the parts in the "converter," there are losses. For example, if a 6-volt d.c. source is used, the wattage used from this source could be 18, while the lamp would be using only 10 to 12 watts. In other words, the loss of 6 to 8 watts or even more is inevitable. Nonetheless, in the present state of the art, it is pretty good efficiency. With the event of transistors, this loss may be cut down very considerably but the cost of a "converter" using these special semi-conductors is rather prohibitive at this writing.

The writer's experiments seem to indicate that while there is a low power factor involved in the operation of lamps when used with the regular household power lines (110-125 volts, a.c., 60 cycles), there is none when a "converter" is used. *This would seem to indicate that the lamp works more efficiently with a properly designed "converter" than by any other means currently available.*

A "converter" may use a so-called "Hot-Shot" battery and in fact there are such units available. Such a battery, however, is very heavy and is beset by the same chemical action and reaction as its little brother, the "b" battery. So use of a "Hot-Shot" battery or its equivalent *must be intermittent only*, but in some cases may be justified.

The use of a so-called "storage battery" with a converter is another matter. Storage batteries are in reality electric storage tanks. They are so-called "accumulators" of electrical energy. They must be "charged" by an electric current. The accumulated electric current is discharged when the battery is put to use. They do not deteriorate when not in use and, when properly cared for, will last indefinitely. When their accumulated energy has been depleted, they are recharged and are again ready for instant use. Storage batteries are called "secondary" batteries in contra-distinction to "Hot-Shot" and "b" batteries which are designated "primary" batteries. Ordinarily, the lead type "storage" battery runs from 2.2 volts to 13.2 volts, although they are commercially designated from 2 to 12 volts. Where the voltage of a single cell of a "b" or "Hot-Shot" battery is 1½, the lead storage battery cell is 2.2 volts. Thus a so-called 6 volt storage battery would have 3 cells connected in series, etc.

However, a serious drawback to the use of a storage battery with a converter in the field is its weight, spilling of the acid, and lack of means to recharge, but the writer has been informed that there is available a 2 volt (2.2) small-sized storage battery and a converter that is adapted to its use. Unfortunately the cost is rather high.

For the lamp user who does not want to be bothered by "b" batteries and their rather expensive replacement, the ideal set-up would be to use a good "converter" that may be easily plugged into the cigarette lighter socket on the dashboard of any mod-

*(Continued on page 131)*

# Story on Stone

By COLONEL RAYMOND C. VIETZEN

IN northern New Mexico and Arizona petroglyphs are numerous and elaborate. Those in Ohio and other eastern states are fewer in number and simpler in form.

The Ohio petroglyph pictured here was located recently on the edge of a stream near the town of Millfield in the southwestern part of Ames Township, Athens County, on a farm owned by Mr. H. O. Nixon. The figures in the petroglyph were carved on a slab of sandstone weighing several tons. The rock slab was tilted at a 30 degree angle, permitting the water and melting snow to drain off and thus reducing frost damage. Although weathering through the centuries has taken its toll, these figures carved by prehistoric Indians are still clearly discernible. At present I am of the opinion that the carvings were made by a member or members of an Algonidian tribe.

In reading or interpreting the various figures, we start at the left with the eagle or thunderbird which was the Indians' messenger or contact with his God. Next we have two sacred lodges connected to a Sun Lodge or Temple.

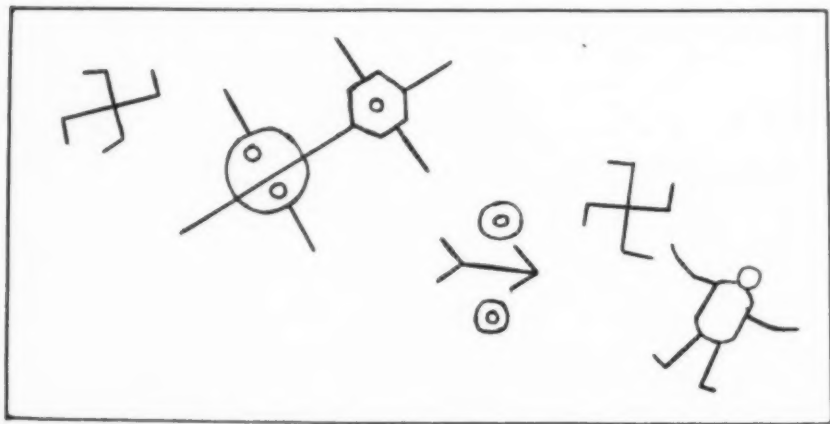
The high priest and the head chieftain lived in these sacred lodges and the Sun Temple was used by them for great ceremonies and rituals.

The arrow is a directional signal, a universal sign. It points to the top of a hill where the ceremonial lodges were located. In going to them one passes between two mounds, one of which is still extant, but the other has been destroyed by coal mining operations. Beyond the arrow is the swastika, an Indian good omen sign. Last, but not least, we have a man gesturing negation. He is the sentry telling all not to enter without permission.

The carvings seem to indicate that this was an important headquarters for both the religious and governmental departments of the tribe and that here leaders met by appointment to make decisions of importance.

Religion and symbols played an important part in the Indian's life. No plans were made unless the sun was shining, as devils and evil spirits lurked in the darkness where they might hear and disrupt plans. Sun temples and sun worship were therefore of utmost importance.

The swastika or good omen symbol



This Ohio petroglyph tells an interesting story to those who are able to read it.

is not frequently found on petroglyphs in the East but was used extensively in the West.

Several hundred feet away from this petroglyph was found another large block of sandstone in which a hominy hole had been carved or worn. This was used by the Indians of the area for grinding corn and acorns into meal for bread and in preparing hominy. Hence the name. The hole was 8 inches deep and 6 inches in diameter. A pestle used with this mortar had been stolen more than 50 years ago. Hominy holes are abundant in Kentucky and Tennessee but seldom encountered in Ohio and then only in the southern part. These are associated with overhanging rock shelters and small caves.

A local farmer told me he first viewed the two stones about 70-odd years ago in company with his grandfather. His family, the rugged terrain, and dense underbrush guarded the antiquities well through the years, although an attempt to steal the hominy hole was made at one time.

An Indian burial was also located near the hominy hole. Across the stream, on a plain overlooking the pictograph and hominy hole, one may see

several Indian burial mounds as yet unmolested. These tumuli appear to be remains of the Hopewell Culture but exploration may prove them to be Adena or Fort Ancient. From the archaeological evidence available, one concludes that here was an aboriginal site of no small consequence in the history of our ancient Indian cultures.

It was decided to remove the rock containing the hominy hole and a portion of the rock containing the petroglyph to Elyria, Ohio where they could be placed on display. A roadway had to be cut through brush and trees and large stones removed before these relics of our aborigines could be conveyed to the farmhouse and loaded.

Ohio has other petroglyphs. Best known is Inscription Rock on Kelley's Island. In Newark human hands, bird tracks, and a cross were carved in rock. At Independence in Cuyahoga County human hands, feet and a serpent were carved. Similar objects were found at Amherst. At Wellsville more varied and elaborate characters were discovered.

Petroglyphs of similar nature have also been found in Pennsylvania and West Virginia.

### **COPPER—THE OLDEST —ALSO THE NEWEST METAL**

THE history of America is one of progress through inventions and most inventions in some way, have been dependent on copper.

In the Revolutionary War, Paul Revere contributed to our victory by producing the brass cannon, spikes and pumps for the famous ship "OLD IRONSIDES." After the war he advanced the shipping industry by producing copper plates and boilers for the steamboat invented by Robert Fulton.

It was Benjamin Franklin, inventor and author, who opened the door to scientific advancement in 1752, by using a kite, string and brass key, he proved that lightning flashes and electrical discharges were the same.

In 1832, Samuel Morse made an early contribution to the use of electricity when he stretched 1,700 feet of wire around his room and transmitted signals from one end to the other. Then in 1876 an-

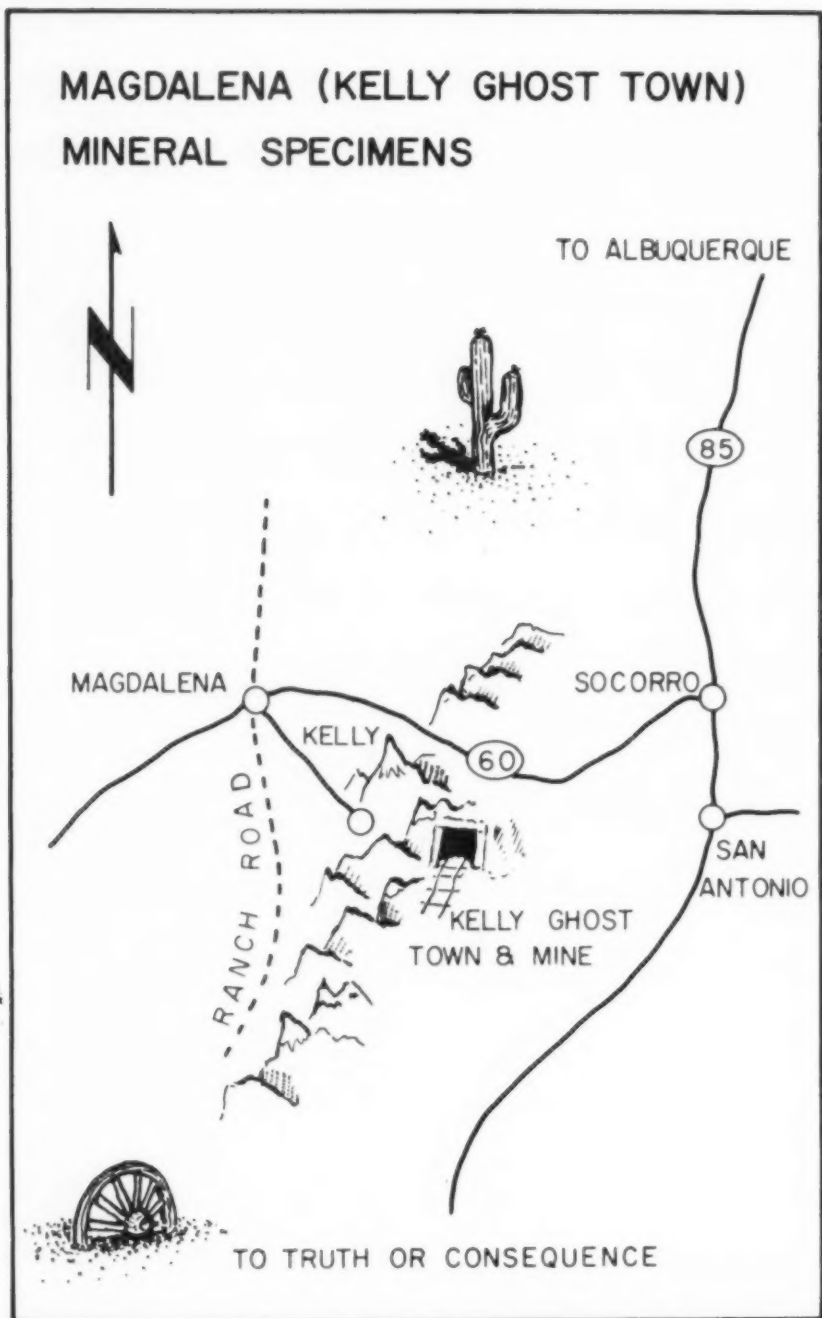
other great inventor, Alexander Graham Bell, put the human voice on copper wire when he invented the telephone.

The greatest of inventors, Thomas Edison, obtained more than 1,200 patents, almost all of which depended upon copper. About half of all the copper used today is used in electrical work.

In World War II tanks, planes, radar, guns and ammunition required huge amounts of this necessary metal and its alloys in bringing about our victory. On the sea rustproof copper, brass and bronze are used today more than ever to endure the salt water and sea air. In the building of a single ship, the Queen Mary, an estimated 3 million pounds of copper was used.

Our own "Statue of Liberty" is made up of over 300 hand hammered copper shells supported by an iron frame. Copper, the old—mentioned in the Bible and used as money in the days of Caesar. Copper, the new—one of the most important metals in the planning of tomorrow.

# MAGDALENA (KELLY GHOST TOWN) MINERAL SPECIMENS





# Old Mines

## NEW MEXICO MINERAL LOCATIONS

IF there is anything which whets a rockhound's appetite it is the sight of an abandoned mine with nearby dump pile. New Mexico, which has been overlooked by many rockhounds in the past, has its share of these, scattered for the most part along obscure trails.

Now, for the first time, these locations will be revealed in "New Mexico Gem Trails," a field guide exclusively on New Mexico. The author is Bessie W. Simpson, whose previous book "Gem Trails of Texas" is well known. We have been favored with a preview of the contents of this book. Some 65 locations with accompanying maps and pictures are described.

Mrs. Simpson's work will save the serious collector hundreds of hours of reconnoitering time. At press time distribution was anticipated for late April. Further details are contained in the announcement on page 136 of this issue.

The guide is interspersed with interesting comments on people, geography, and famous mineral finds pertinent to the region. Following is a typical excerpt, with map on opposite page, by special permission of the author:

"Three miles southeast of Magdalena and 1,000 ft. higher in elevation is the ghost town of Kelly. You can hardly believe it was once a prosperous mining town of 3,000 population. Now the population is zero, or perhaps at times a Mexican family remains to act as guard for some company-owned property. One small church is kept up by the churches in that area.

"Kelly mining area is in the valley of the Magdalena Mountains on the edge of the Cibola National Forest. It is thickly dotted with tunnels, dumps, brick chimneys, rickety hoists, etc. These make you fully aware of the danger signs you see posted about. When you collect here you are truly hunting at your own risk.

"Kelly may be a ghost town, but it is a bonanza for the specimen collector as every mine dump is a hidden possibility of finding an outstanding specimen, even a coveted blue-green Smithsonite specimen, for it was here in the 1890's that the second big discovery of valuable zinc carbonate (Smithsonite) was made. This ore was salvaged from the dumps and mines and brought millions of dollars between 1904 and 1931.

"Every rockhound dreams of finding just one outstanding specimen overlooked by the miners, and every year a few specimens show up in the vicinity of Kelly or Magdalena. Whether they are from some old collection found in the truly "Bonanza" days or recently found by some lucky collector, we will never know. We do know they are a prize worth owning."

(Both the New Mexico and Texas "Trails" will be featured by Mrs. Simpson at Booth 19 at the Saginaw Gems and Minerals Fair.)

## SPLENDID NEW EXHIBIT

THE A. E. Carlton Collection, numbering more than sixty choice specimens of Cripple Creek gold ores, has been cleaned, sorted, and transferred to a new glass-enclosed cabinet at the Colorado College Museum in Palmer Hall, it is announced by the curator, Dorothy Mierow. The museum is open to the public weekdays 8 a.m. to noon and 1 to 4:30 p.m. with no charge for admission.

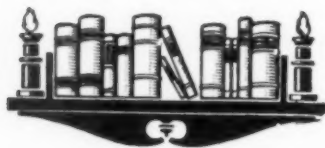
These ores include wire silver and an occasional copper mineral, in addition to the specimens of such important gold-bearing minerals as calaverite, sylvanite, and native gold.

They are contained in phonolite (a volcanic rock), the Pikes Peak granite, and several metamorphic rocks, and they show the typical associations such as fluorite and stibnite.

The mines represented include the Cresson, Elkton, Mary McKinney, Strong, Pharmacist, and others famous in the exciting history of Cripple Creek, one of the great gold camps of the world.

Richard M. Pearl.

# Book Reviews



**STUDIES IN PALEOBOTANY.** Henry N. Andrews, Jr. John Wiley & Sons, Inc. 1961. 487 pp. \$11.75.

This is an excellent textbook on paleobotany, not only for geology classes and advanced students, but also for students having little botanical background, because of the splendid and extensive illustrations.

There are 181 figures and 604 illustrations and drawings in the book. The 18 divisions take you in stages from the beginning of plant life to recent, i.e. Liverworts "Hepatophyta" to flowering plants (Angiosperms) "Anthophyta." There are comprehensive references at the end of each division.

The text provides the student with the following categories: Descriptions and illustrations of wood anatomy, paleobotany techniques, spore morphology and spore genera histograms, pinnule morphology of carboniferous fronds, stratigraphic time charts and time table, micro-pictures and descriptions of flora from North America, Europe, Asia, Arctic, and Antarctic regions.

In addition to the author's own illustrations, there are many from authorities associated with institutions in the United States, Great Britain, Sweden, Norway, Germany, Russia, and France.

W.L.H.

**A FIELD GUIDE TO ROCKS AND MINERALS.** Frederick H. Pough. 3rd ed. Houghton Mifflin Company, Boston. 1960. 349 pp. \$4.50.

Since 1953, when the first edition appeared, this book has served rock-hounds and students as an authoritative guide to the identification of rocks and minerals in the field. Although it is equivalent to a beginner's course in mineralogy, it was designed primarily as a field guide. Its handy size makes it convenient for carrying in the car, knapsack, or capacious pocket. If you should lose it, or drop it down a mine shaft, its moderate price makes replacement possible.

This new edition contains 72 more colored photographs of rocks and minerals than did the preceding, making a total of 149 in full color. These are a great aid to the beginner when he is trying to identify his specimens. Along with each color photograph, as well as with the black and whites, are given a diagrammatic sketch of the crystal shape of the mineral, and a description of its physical properties, composition, identification tests, distinguishing characteristics, etc. To further aid in classification, the author groups all minerals of the same chemical type together, such as the carbonates, sulphides, oxides, halides, etc.

The section on uranium has been greatly expanded. A helpful glossary and bibliography are included. We predict the good repute of Dr. Pough's Guide will be further enhanced by the current edition.

**WONDERS OF ROCKS AND MINERALS.** Richard M. Pearl, Professor of Geology at Colorado College. Dodd, Meade & Co. 1961. 64 pp. \$2.95.

This is an ideal book for the young collector and beginning student of rocks and minerals. Subject matter includes crystals, ores, metals, gems, meteorites and other phases of our mineral kingdom.

Many helpful hints are given on how to build up a rock collection. Occurrence and classification of minerals are outlined simply but adequately for the beginner. The chapter "Mineral Oddities" will be of interest to all readers. The oddities include minerals that burn, minerals that bend, minerals that float on water, and minerals that are normally white but glow like coals of fire when exposed to black light.

Another interesting and instructive chapter is "The Growth of Crystals." Among the crystal growths described are those of crystallized rain drops, ordinary snow crystals which are actually six-sided formations, with no two sides alike.

The book contains many fine illustrations and photographs. We highly recommend it for young people and beginners in mineralogy of all ages.

**MINERAL USE GUIDE.** R.H.S. Robertson. Cleaver-Hume Press Ltd., 31 Wright's Lane, London W8, England. 43 pp. 1960. \$3.50 postpaid.

The author is a Director of Resource Use Ltd. and of Natural Resources Ltd. of Scotland. The Guide consists of 32 diagrams in which the properties and uses of over 50 minerals are shown.

Mr. Robertson envisioned a classic diagram consisting of an inner circle in which the name of the mineral appears. A first concentric outer circle shows common unit processes (fusing, flaking, etc.) used in preparing the mineral for market or for further processing. The second concentric outer circle shows the characteristics which determine the uses to which the mineral or its derivatives are put. Fanning out from the concentric circles are spaces in which are listed these uses. The diagrams are referred to as Robertson's Spider Webs.

Not all minerals lend themselves to this precise treatment and Mr. Robertson has modified it when necessary.

This little book is actually a concise story of how and why minerals are used in industry. As such it will prove a useful tool to engineers, chemists, purchasing agents, and industrial planners.

**OIL FOR THE WORLD.** Stewart Schackne and N. D'Arcy Drake. Harper & Brothers. 143 pp. 1960. \$2.50

The art of writing a readable book about an industry is relatively new. The authors pioneered in 1950 with their first edition of this book. This latest edition is the third.

Although the Standard Oil Company of New Jersey holds the copyright, and Mr. Schackne is in their employ, this book is not a history of nor a public relations job for this particular oil company. Of the list of 84 photographs, credit is extended to companies other than Standard for nearly half. The beginnings of the Standard Oil Trust, originating in the efforts of a group of business men in Cleveland in the late 1860's to mold the infant oil industry into an organization based on efficiency, uniform products, and large volume, and the Trust's dissolution in 1911 into 34 independent companies by order of the Supreme Court, are outlined briefly.

The authors have avoided the biographical approach in tracing the growth of the industry. Individuals are mentioned only incidentally and company names (U.S. and foreign) mainly to point up the competition among producers and distributors today. They have also avoided too many statistics. Charts, rather than tables of figures, are used to show relative production and consumption on the world's continents.

Evolution of the industry is traced from formation of the oil in the earth, through early uses of oil found on the surface, the hunt for and recovery of it, transportation, modification of its properties, and distribution to world markets. The photographs, many of foreign origin, add greatly to the interest of the book.

One cannot read this little book without a sense of pride in man's ability to wrest a raw material from the earth and convert it to his service. Other industries could profit from similar analyses by authors equally knowledgeable.

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# Important Coming Events—1961

## FEDERATION SHOWS

**June 9, 10, and 11. Texas Federation of Mineral Societies.** Annual Convention and Show, Armory, Wichita Falls, Texas. North Texas Gem and Mineral Society, host.

**June 9, 10, and 11. Rocky Mountain Federation of Mineralogical Societies.** Convention and Show. Industrial Building, Fair Grounds, Casper, Wyo. Noon to 10 p.m. each day. Natrona County Rockhounds Club, host.

**June 23, 24, and 25. California Federation of Mineralogical Societies.** 22nd Annual Convention and Show, Los Angeles County Fairgrounds, Pomona, Calif. Four San Fernando Valley clubs, hosts.

**June 29 thru July 2. The Tri County Rocks and Mineral Society, Inc.,** of Saginaw, Michigan, will be host to the Twenty-First Annual Convention of the Midwest Federation of Mineralogical and Geological Societies, at Saginaw County Fair Grounds. For complete information see page 106 ad in this issue.

**Aug. 10, 11, 12, 13. American Federation of Mineralogical Societies and Eastern Federation of Mineralogical and Lapidary Societies.** Combined Convention and Show, Municipal Auditorium, Miami, Fla. Gemcrafters of Miami, host.

**Aug. 31 thru Sept. 4. Northwest Federation of Mineralogical Societies.** 21st Annual Gem and Mineral Show in conjunction with the Southeastern Washington Fair and Rodeo, Exposition Building, Walla Walla, Wash. Horse-heaven Gem and Mineral Societies, hosts.

## '61 MIDWEST ROCKRAMA

THE Indiana Geology and Gem Society will be host to a Midwest Federation "Rockrama," to be held in the Agricultural Building at the Indiana State Fairgrounds, Indianapolis, Indiana, October 6, 7, and 8, 1961. Hours on the 6th and 7th will be from 10 a.m. to 10 p.m., and from 12 noon to 9 p.m. on the 8th. Dealer space is available by contacting show chairman Charles O. Mull, 915 E. 49th street or club president B. E. Earnest, 6120 East-ridge Drive, Indianapolis, Indiana. Security is to be handled by the Burns Detective Agency. This show will be of

special interest to individuals who are interested in the Art of Lapidary, and to collectors of Minerals and Fossils.

## MIDWEST INDIVIDUAL CLUB SHOWS

**May 27-28. The Ishpeming Rock & Mineral Club, Inc.,** will hold a Field Trip meet at National Ski Museum, Ishpeming, Mich. Leave promptly at 8 a.m., May 27. Will collect pyrolusite, aphanite garnets, magnetite, limonite pseudos, and a host of Iron County minerals. Send card notice to Mrs. Marian Markert, 107 W. Ridge St., Ishpeming, Mich.

**June 3-4. The Kalamazoo Geological and Mineralogical Society** will hold a Rockfest at the Kalamazoo County Center Building, Lake Street, Kalamazoo, Michigan. For information contact Mrs. W. Spafford, 9511 Woodlawn Drive, Kalamazoo, Michigan.

**July 30. Rock-Swap Cooperative Dinner.** The Mid-Iowa Rock Club and The Sac & Fox Lapidary Club will hold an all day Rock-Swap and Co-operative Dinner. Place: Edmundson Park, Oskaloosa, Iowa (on Co. Rd. 309; just off Hw. 137 at So. edge of Oskaloosa). Time: All day get-together but dinner at 12:30 p.m. (Bring enough food for self and family)—July 30. Attention: Field trips to be arranged for July 29 afternoon if enough interest shown. (Mineral specimens and fossils). For information contact: Mrs. Mary Stitely, 1230 C. Ave. East, Oskaloosa, Iowa.

**Sept. 2, 3, 4. The Lincoln Gem & Mineral Club, Inc. of Lincoln, Nebr.** will hold Field Trips West at Ft. Robinson Inn, Ft. Robinson, Nebr. Leave promptly at 8:00 a.m., Sept. 2. Send card notice and for information write to: Mrs. Maurice Tracy, Sec., Lincoln Gem & Mineral Club, 3601 South St., Lincoln, Nebr. For lodgings and meals contact: Mr. John G. Kurtz, Supt., Ft. Robinson State Park Facility, Crawford, Nebr.

**Oct. 7-18. The Lincoln Gem & Mineral Club, Inc. of Lincoln, Nebr.,** will hold a Gem Show at the National Guard Armory, 1776 N. 10th St., Lincoln, Nebr. For complete information contact: Mrs. Maurice Tracy, Sec., Lincoln Gem & Mineral Club, 3601 South St., Lincoln, Nebr.

**August issue ad deadline is June 10th!**

## Midwest Club News

Mrs. Bernice Rexin, Club Editor  
3934 N. Sherman Blvd.  
Milwaukee 16, Wisconsin

LAKE ERIE GEM & GEOLOGICAL SOCIETY on March 8 heard H. W. Meridith of the Harshaw Chemical Co. speak on "Growing Crystals and Their Industrial Uses". Col. and Mrs. Raymond C. Vietzen planned to take the group on a tour of Glovers Cave at Trenton, Kentucky on April 8. Col. Vietzen and his wife Ruth have made a study of this cave since 1937. Artifacts and relics of Indian burials that they unearthed in this cave are on display in their museum in Elyria, Ohio.

RICHLAND LITHIC AND LAPIDARY SOCIETY will sponsor a non-commercial exhibit of rough and polished gemstones, minerals, and Indian artifacts on June 17 from 2:00 p.m. to 9:00 p.m. and June 18 from 10 a.m. to 8 p.m. at Kingwood Center, 900 Park Ave., West, Mansfield, Ohio. There is no admission charge.

LINCOLN GEM AND MINERAL CLUB recently enjoyed an illustrated lecture on "Cave Trips," that was presented by Dick Hedges. It was erroneously reported by the Club News editor in the April, 1961 issue of EARTH SCIENCE, that the Lincoln Gem & Mineral Club was sponsoring a series of Lapidary classes. These classes are sponsored by the Recreation Department of the city of Lincoln, Nebraska. The instructor is a member of LG&MC. The Recreation Department has spent over a thousand dollars for lapidary equipment and the classes are held three times a week. The registration fee for a ten week period is only \$2.00 and everything but the rock is furnished.

RIB MOUNTAIN GEM & MINERAL SOCIETY will hold its fourth annual show on Sept. 23, 24, 1961, in the Youth Building, Marathon Park, Wausau, Wisconsin. Displays from other clubs are invited. Dealer inquiries are desired. Write Ron Hoffman, Show Chairman, 933 South Fifth Ave., Wausau, Wisconsin, for further information.

MID-IOWA ROCK CLUB in a recent bulletin warns that grinding copper material such as malachite and azurite can be poisonous, so good ventilation is a must! Copper poisoning causes severe headaches. Another material that is dangerous is abalone shell. It cuts easily and is very lovely, but the fumes given off when grinding are treacherous. Mexican workers who grind abalone shell constantly do not live long.

OMAHA MINERALOGICAL SOCIETY at a recent meeting was taught how to cut and polish gem stones by Richard Mortenson, President of the Nebraska Mineral & Gem Society. On February 25 the club visited the Lyman-Richy sandpits where a few small agates and several fragments of bison bones were found. The dumps, however, contained an abundance of flat round stones, and the members of the club, who are all juniors, soon forgot their disappointment in the poor pickings on the rockpiles, by testing their skills in skipping stones across a nearby lake.

AUSTIN GEM AND MINERAL SOCIETY on March 28 made its annual visit to the home of Mr. and Mrs. Cliff Benson, at Hollandale, Minnesota, to view the Bensons' vast collection of crystals, gems, fossils, and artifacts. At a recent meeting the society viewed Edith Morey's slide pictures of fifteen European nations. During the meeting, the large black and gold trophy won by the Society for the best exhibit at the Austin Hobby Show was on display.

MESABI ROCK AND MINERAL CLUB recently viewed "Echo Satellite," a new Bell Telephone Co. film. Rock specimens from the Club's collection were on display and following the showing of the film, members and guests participated in a mineral identification quiz.

MID-WEST MINERALOGICAL AND LAPIDARY SOCIETY on March 21 was shown two films: "Mountain of Fire," a color film of Mt. Etna during an eruption, and "America The Beautiful," a film dealing with the most interesting scenic areas in the United States.

MEMPHIS ARCHEOLOGICAL AND GEOLOGICAL SOCIETY enjoyed a demonstration on silversmithing at its February meeting. William Van Winton made a ring and Donald Smith showed how to polish it. At the recent gem show sponsored by the Jackson Mineral Club in Jackson, Michigan, MA&GS members won seven first place ribbons and two second place ribbons.

MICHIGAN LAPIDARY SOCIETY on May 10 enjoyed viewing a fast moving film, "Vacation in the West," which was presented by Dennis Glen Cooper, who is head of the Exact Science Dept. of Sherrard High School and star of the weekly TV show "Realm of the Wild." Mr. Cooper and his associates spent four summers in producing this film, which includes a mule trip down the Grand Canyon and a trip on a rubber raft down the raging Yampa River, through the weird canyons of Dinosaur National Monument.

**KANSAS CITY LAPIDARY CLUB** has nearly completed setting up the machinery for its new workshop and will soon be ready to start lapidary classes. Great care is being taken in the installation of all equipment so that no accident hazards will be present when proper operating procedures are used, and the society has issued an excellent set of workshop safety rules for lapidaries.

**DOUBLE "I" GEM AND MINERAL CLUB** in lieu of its April meeting in Danville, Ill., attended the Wabash Valley Gem & Mineral Society's earth science and lapidary show which was held April 7-9, in Lafayette, Indiana. The show program included two lectures "Western Field Trip," by Mike Clifton, and "All About Fossils," by Mr. and Mrs. Merton Young.

**MIAMI VALLEY MINERAL AND GEM CLUB (Ohio)** plans to make an overnight visit to Nashville, Indiana, a popular resort area, on May 20-21, to pan for gold and to collect geodes.

**HEART OF AMERICA GEOLOGY CLUB** at its February meeting heard Dr. Eldon Parizek speak on the "Geology of the Greater Kansas City Area." The presence of marine and land fossils in the shale and limestone of this area show that it was probably inundated by water thirty or forty times during geologic history due to the movements of the earth. There is a large fault in eastern Kansas and lesser ones in the Kansas City area, therefore the chances of a severe earthquake in this region are not at all remote. During the last ice age, lobes of the glacier reached down to where the Missouri River is now, and in fact outlined the course of the river.

**DES MOINES LAPIDARY SOCIETY** features special exhibits at its meetings. In March each member who planned to display was asked to bring his most prized specimen and, in contrast, a specimen that proved to be a great disappointment, but for some reason was not discarded. A brief explanation was to accompany each individual display. Picture rocks were slated for the April meeting and the May meeting was to be enhanced by table decorations that included a rock or mineral specimen.

**CENTRAL MICHIGAN LAPIDARY AND MINERAL SOCIETY** at its February meeting heard C. B. Morris of Grand Rapids, Michigan, speak on "Shaping and Polishing Petoskey Stones." Petoskey stones are petrified coral and their beautiful pattern is greatly enhanced by a good polish. Mr. Morris, like many other fine artists, lets the stone suggest the design.

**EARTH SCIENCE CLUB OF NORTHERN ILLINOIS** held its fifth annual Junior Festival on April 14. The entire program was devoted to junior activities and included fine exhibits of fossils, rocks, minerals and related displays. Each exhibitor was given an exhibit ribbon.

**BLACKHAWK GEM AND MINERAL SOCIETY OF IOWA** enjoyed an interesting talk on "Opal," by Dick Brush, Southwestern Regional Vice-President of the Midwest Federation. The oldest opal mines were in what is now known as Czechoslovakia. In the United States precious opal is found in New Mexico, Nevada and Idaho. The opal found in the Virgin Valley mine in Nevada is a replacement for wood. Near the mine is a location for green fire opal. Mexico produces a translucent red, tan and yellow opal that may or may not have fire. The largest pieces of precious opal are produced in Australia. When grinding opal, it is wise to remember that the fire in the opal is in layers and lays edge on. Grind as close to the color as possible without grinding into it.

**KALAMAZOO GEOLOGICAL AND MINERAL SOCIETY** on April 3 heard Miss Ginta Kengis, a student at Western Michigan University, speak on "Baltic Amber." The talk was illustrated with amber jewelry that was displayed by Mr. Vallis Kengis.

**MUSKEGON COUNTY ROCK AND MINERAL ASSOCIATION** recently heard Mrs. Elizabeth Walthen give a talk on the art of preparing exhibits of rocks and minerals. The society is building its own display case which it hopes to fill with outstanding specimens donated by its members.

**INDIANA GEM AND GEOLOGY SOCIETY** recently heard Robert Rice of the Linde Air Corp. give an interesting talk on "Fossils." The collecting of fossils goes back to Neanderthal man as fossils are found with his remains. A fossil is any recognizable organic structure or impression that has been preserved from ancient times. The best preserved fossils are those in which immediate burial took place and where no oxygen could enter.

**GRAND RAPIDS MINERAL SOCIETY** ON APRIL 12 heard Miss Helen Martin, Geologist, speak on the "Glacial History of Michigan." Miss Martin is author of many pamphlets and books dealing with the geology of Michigan and it has been said of her "When Miss Martin speaks, she makes it sound as though the rocks were speaking to you."



**CHICAGO ROCKS AND MINERALS SOCIETY** recently heard a very enlightening talk on "Methods of Prospecting and Rock Hunting," by Professor Gerald H. Haddock, who covered equipment and methods used by professional geologists in searching for mineral deposits; methods that can be used by amateurs; U. S. Geological Survey maps; and information on mine claims. A three page review of this talk appears in the March issue of the club's bulletin, *Pick and Dop Stick*.

**ST. LOUIS MINERAL AND GEM CLUB** recently made a 240 mile trip to Braidwood, Illinois to collect fern fossils. The club reports that it gathered an abundant supply of good fern fossils.

**WISCONSIN GEOLOGICAL SOCIETY** on April 10 was presented a demonstration-lecture on "V-Lock Jewelry," by Doris Kemp of the Chicago Lapidary Society. Mrs. Kemp pointed out the unlimited design possibilities of this method and showed how even broken and fractured pieces of gem stone can be used to produce beautiful pieces of jewelry. Her explanation of this method was so clear that even those who had never tried to make jewelry were sure that they could use this method with success.

**NEBRASKA MINERAL AND GEM CLUB** at its March meeting viewed beautiful projecting slides of various types of agate. These slides were made of real agate, cut so thin that they were transparent to the light of the projector. The slides were prepared and projected by Claud Clary and Frank J. Vokoun.

**ELKHART MINERAL SOCIETY** at its April meeting heard William J. Wayne, an authority on glacial geology, speak on "Glacial Geology." The surface features of the earth have changed so slowly during human history that little thought was given to their possible origin until the early part of the nineteenth century. Since that time, geologists have divided the earth's history into periods, including the late ice age. Mr. Wayne discussed and showed pictures of the marks left by the glaciers on today's landscape. During the last ice age about five-sixths of Indiana was covered by the glacier.

(Continued from page 121)

ern automobile. Since automobiles can get into almost any place without too much difficulty, the use of a small ultraviolet lamp in the field is almost as convenient as in one's home. And best of all, it really costs nothing for the energy consumed from the automobile's ignition system.

(Continued from page 118)

who applies the colors in the order of their hardness, or power of resisting fire (refractoriness), beginning with the hardest.

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A final interesting feature of the exhibits consist of a number of pieces of massive gay jewelry from Algeria, North Africa. Its size, if not its flashy imitation stones, puts to shame the current, splashy fashion of costume jewelry in this country.

Any trip to Chicago which does not include a visit to this "Gem of a Room" falls far short of the possibility of seeing a genuine treat and surprise that one can never forget.

N. B. Pictures for this article were furnished by the Chicago Natural History Museum and much of the text was taken from Museum Bulletins as written by Dr. Paul S. Martin, Chief Curator of Anthropology, and Mr. H. W. Nichols.

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**ROBERT L. WATTS:** Letter of early February returned, insufficient address. Sorry. If you still wish to either buy or sell Nuggets, send full mail address. **FRANK H. WASKEY**, Oakville, Washington.

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### ADVERTISERS INDEX

|                                  |         |
|----------------------------------|---------|
| A-K Rocks and Gems               | 135     |
| Albanese, John S.                | 134-135 |
| Alessi, A. J.                    | 142     |
| Am. Gem & Min. Suppliers Assn.   | 127     |
| American Meteorite Laboratory    | 136     |
| B. & H. Rock Shop                | 135     |
| Beslabs                          | 133     |
| Black Light Eastern Corp.        | 98      |
| Cappotto Rocks & Minerals        | 142     |
| Clement, Ben E.                  | 134     |
| Conklin, L. H.                   | 137     |
| Earth Science (Back Issues)      | 141     |
| Earth Science (Subscriptions)    | 141     |
| Gem & Mineral Fair (Saginaw)     | 106     |
| Gem Trails                       | 136     |
| Gems & Minerals Magazine         | 134     |
| Geode Industries                 | 100     |
| Gilbert's Lapidary               | 141     |
| Heartstone Enterprises           | 142     |
| Heise, Edward                    | 142     |
| House of Enterprise              | 137     |
| Jackson, Don                     | 142     |
| Jewelgems by Jay O'Day           | 135     |
| Kyte, Ken                        | 134     |
| Landon, S. E.                    | 100     |
| Laughery, Alice L.               | 141     |
| Markert and Steele               | 137     |
| Midwest Federation               | 144     |
| Mineral Equipment Company        | 143     |
| Mineral Science Institute        | 141     |
| Minerals Unlimited               | 142     |
| National Gem & Min. Show (Miami) | 132     |
| Office Specialties               | 134     |
| Riley Rock Shop, The             | 127     |
| Roberts Rock Shop, Tom           | 142     |
| Rockrama (Indianapolis)          | 132     |
| Rocks & Minerals Magazine        | 142     |
| Rogmor                           | 136     |
| Rollin' Rock Club                | 132     |
| Rubey's Rocks                    | 136     |
| Stewart's Gem Shop               | 133     |
| Timber of Ages                   | 133     |
| Victor Agate Shop                | 134     |
| Ward's Natural Science Estab.    | 137     |
| Waskey, Frank L.                 | 140     |
| York River Mining Company        | 127     |

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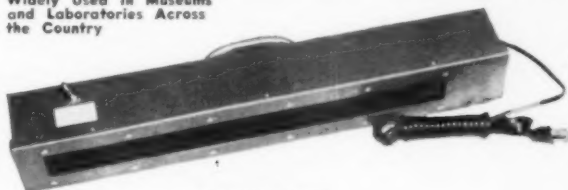
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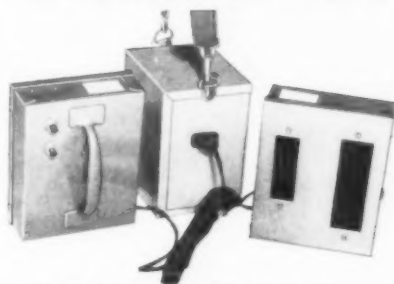
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